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The intellectual test differences between Negro and white first and fifth graders of different social classes were considered. The Lorge-Thorndike, Level I, Primary Battery was used for first graders, and Level III for fifth graders.

It was concluded that race influence tends to become more manifest and crucial as the social class level increases. The hypothesis used was that increased participation in the cultural mainstream tends to increase intelligence level. The absence of a father in the home adversely influences the child's intelligence. The children who have had preschool experience score significantly higher than those who have not. Deprivational influences have a cumulative impact.

In summation, the Negro group shows greater deprivation than the white group. Tables are used to give details, and references are offered.

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Some Data on Social Influences in Negro-White Intelligence Differences

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Some Data on Social Influences in Negro-White Intelligence Differences[1,2]

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This paper reports an aspect of a larger study which attempts to identify specifically some aspects of experience that influence the development of intellective functions in children. The social experiential variable is often treated in the psychological literature in a most macroscopic manner. It has been one of our purposes to break down the attributes of social experience along what might be called social environmental and developmental dimensions.

As regards the social environmental, the attempt has been to analyze race by some of its psychological properties, to determine some of the subcomponents of social class, and to determine something of the interaction of the two, particularly as it impinges on intellectual achievement and growth.

On what we are calling the developmental dimension, the focus has been on identifying "experience groups" in terms of language, perception, learning, general intellective functioning, and, to a lesser extent, self, attitudinal, and motivational variables. These variables, in turn,

1. The data reported here were collected as part of studies supported by the Taconic Foundation, by Research Grant No. OM-820 from The National Institute of Mental Health of the National Institutes of Health, Public Health Service, and by Project #908 of the Cooperative Research Program of the Office of Education

2. An earlier version of this paper was read at the biannual meeting of the Society for Research in Child Development, Berkeley, California, April, 1963.

3. We should like gratefully to acknowledge the assistance of Dr. Martin Whiteman specifically, and of all the other members of the staff of the Institute who worked on the Verbal Survey.

have been broken down into more specific components for measurement and for evaluation of interrelationships. For example, we have been dealing with multiple language measures in both the expressive and receptive categories; and with differential modality functioning--i.e., auditory and visual, and, to a lesser extent, tactual--in groups of different reading levels, age or social class levels; etc.

The data have been collected on cross-sectional samples, but the work is closely associated with a large-scale longitudinal study which attempts to manipulate mediating environmental variables and to measure any subsequent behavioral modification or facilitation in intellectual growth..

The cross-sectional study referred to is a large social class and race analysis, involving first and fifth grade children, which we colloquially refer to as "The Verbal Survey'--a term which is something of a misnomer, as the range goes beyond verbal measures.

This report is concerned with a limited but rather interesting segment of the study: the intellectual test differences between Negro and white first and fifth graders of different social classes--though the focus in this report is largely on the lower class. Two more specific independent variables of special significance are presence or absence of father in the home, and whether the child had an organized pre-school experience.

For the most part, the data reported refer to 543 urban public school children in a stratified random sample, though some analyses are done with only core verbal survey children, where the N is 292. The sample was drawn from first and fifth grades, Negro and white, and was stratified on social class, as measured by the Institute's 12 point

socio-economic SES scale. (This scale will be separately reported elsewhere). The scale is derived from occupation and education of the family's main breadwinner; it has a correlation of .27 with a "dilapidation index" derived from the 1960 New York City Census of Housing[4] in which each housing unit on each city block is evaluated along a weighted six point continuum from "sound, with all plumbing facilities" to "dilapidated." Housing condition, as measured by these criteria, was then correlated with SES for each 292 children, and the obtained .27 correlation between the two indicates a low but statistically significant relationship between housing conditions and SES.

For purposes of statistical analysis, after each subject was categorized on the 12 point SES scale, the whole population was trichotomized so that comparisons are made among three social classes, referred to as SES Groups I, II, and III, with I representing the lowest part of the continuum, and III the highest.

The intelligence test used was the Lorge-Thorndike, Level I, Primary Battery for first graders, and Level 3 for fifth graders. Both forms, as described by the authors are essentially non-verbal (Lorge-Thorndike, 1959). Level I uses pictorial items only to measure abstract thinking, pictorial classification and pictorial pairing. Level 3 uses picture classification, pictorial analogies, and numerical relationships. This test was selected because of the inclusion in its standardization population of a much better than usual representation of the lower social class categories. It was given in small groups, during school hours, by trained examiners on the Institute's research staff.

The SES data were gathered by mailed questionnaires and home interviews.

4. U.S. Bureau of the Census, U.S. Census of Housing, 1960, Nos. 274-6.

The SES items were only a part of the interview schedule. The rest of the items had to do with home conditions, daily routine, and aspirations of both parents and children. The appropriate items here are now being collated into a "deprivation index" for purposes of identifying the sources of inter- and intra-class variation.

As can be seen in Table 1, the overall IQ differences between Grades 1 and 5 are minimal, but, as can be seen in Table 2, there are significant IQ differences between SES levels. Only one of the t-tests reported is not statistically significant. The combined grade differences were significant for each SES comparison. It is interesting to note that the differences in level of performance from the lowest to the highest SES group are significant at $< .001$. These figures include both Negro and white children in all cells.

Table 1

Lorge-Thorndike Intelligence Scores by SES
For First and Fifth Graders
(N=292)

SES Group	Grade 1		Grade 5		Both Grades	
	$\bar{X}$	N	$\bar{X}$	N	$\bar{X}$	N
I (Lower)	94.70	46	94.75	64	94.73	110
II (Lower Middle)	102.69	45	102.74	54	102.72	99
III (Upper Middle)	108.00	36	110.13	47	109.20	83
N=		(127)		(165)		(292)

Table 2

T-Test Comparisons* Between SES Groups on Lorge-Thorndike Intelligence Test Performance (Grades 1 and 5 Separately and Combined, N=292)

SES Group	Grade 1		Grade 5		Both Grades	
	Sig.	t	Sig.	t	Sig.	t
I VS II..	<.01	2.884	<.01	2.663	<.001	3.879
II VS III	<.001	4.433	<.001	5.026	<.001	6.730
II VS III	N.S.	1.724	<.05	2.361	<.01	2.959
N=		(127)		(165)		(292)

* 2-tailed test

These results are in the traditional direction, and could reflect the ascending isomorphism between social class and the item content of intelligence tests. Nevertheless, such results are usually predictive of school achievement, although their meaning with regard to individual potential may be questionable.

Table 3 presents an analysis of Lorge-Thorndike test performance, broken down further by race. The three-way analysis of variance indicates that in addition to differences determined by SES, highly significant differences were also found for race, with Negro children scoring consistently lower than white children.

Table 3

Three-Way Analysis of Variance on Lorge-Thorndike Intelligence Test Performance by Grade, Race, and SES (N=292)

Source	Sum of Squares	df.	F	Sig.
Grade	6.676	1	< 1.000	N.S.
Race	4292.859	1	20.938	< .001
SES	8402.120	2	20.490	< .001
Grade x Race	981.415	1	4.786	< .05
Grade x SES	10.014	2	< 1.000	N.S.
Race x SES	514.074	2	1.253	N.S.
Grade x Race x SES	430.621	2	1.050	N.S.
Within	57406.512	280		
Total	74024.230	291		

Mean Differences for Race Groups*

	$\bar{x}$	S.D.	N
Negro	97.50	14.46	153
White	106.01	16.37	139

Mean Differences for Race Groups Within Grades

	$\bar{x}$	S.D.	N
First Grade			
Negro	99.45	14.11	69
White	103.50	14.58	58
Total First Grade	101.30	14.41	127
Fifth Grade			
Negro	95.89	14.62	84
White	107.81	17.40	81
Total Fifth Grade	101.74	17.08	165

*Note: Means for SES Groups reported in Table 1

Table 4 shows the IQ data by race within social class, combining grades 1 and 5. As can be seen, differences between classes and between races are significant except for the comparison between Negro and white children at SES I.

Table 4

Lorge-Thorndike Intelligence Test Scores by Race Within SES
(First and Fifth Grades Combined, N=292)

SES Group	White		Negro			
	$\bar{x}$	N	$\bar{x}$	N	t*	Sig.
I	97.50	52	92.24	58	1.865	N.S.
II	107.02	41	99.67	58	2.480	.05
III	114.74	46	102.32	37	4.200	.001

* 2-tailed test

On an expanded sample (N=543) essentially the same linearity and differences are obtained. Table 5 presents results of a two-way analysis of variance for IQ performance by race and SES. Highly significant differences in performance as predicted by each of these variables occur. Although the race by SES interaction term did not reach the .05 level of statistical significance, the directionality is clear: Negro-white differences increase with higher SES levels. Children in both groups show gain in IQ with ascending SES level, but the gain in the white group is greater. It should be noted, though, that Negro SES group II and III score higher than the white SES group I.

Table 5

Two-Way Analysis of Variance on Lorge-Thorndike Intelligence Test Performance by Race and Social Class (N=543)

Source	Sum of Squares	df.	F	Sig.
Race	10757.827	1	52.754	<.0001
SES	16233.758	2	39.803	<.0001
Race x SES	831.908	2	2.039	<.10
Within	109506.703	537		
Total	137656.866	542		

The failure of the interaction term to reach significance may well be accounted for by the enormous contribution to the total variance of each variable separately, as reflected in the F ratio, with consequently little left over for the interaction term.

With Table 6, we go further into the race-by-SES interaction and find a similar pattern of differences as reported for the smaller sample in Table 3.

Table 6

Lorge-Thorndike Intelligence Test Scores by Race Within SES (First and Fifth Grades Combined, N=543)

SES Group	White		Negro			
	$\bar{x}$	N	$\bar{x}$	N	t*	Sig.
I	97.24	104	91.24	157	2.564	.02
II	105.59	68	94.87	111	4.785	<.001
III	114.92	52	102.57	51	4.625	.001
N=		(224)		(319)		

* 2-tailed test

In enlarging the N's, we find that even at the lowest SES level, the IQ differences between Negro and white children reach statistical significance though still at a lower significance level than those for the other SES levels. IQ differences between Negro and white at the higher SES levels tend to become more pronounced as sample size is increased.

It is extremely interesting to note throughout all of the comparisons the more sharply defined escalation of the white majority group child's IQ through the three social class steps. In the lowest class, where social deprivation is most homogeneous and the influence of race is attenuated by the pervasiveness of poor living conditions, there is somewhat less difference, as has been mentioned, between Negro and white. While the differences between white SES I and II are significant at the .001 level, those for corresponding Negro groups are at the .05 level. In regard to the white SES levels II and III, the difference is at the .01 level, while this difference in the Negro group is not statistically significant at all.

To summarize: (1) a linear relationship exists between SES and performance level for both Negro and white groups, and (2) within this linear relationship the absolute increase in IQ is greater for the white group than it is for the Negro.

The interpretation put forth here for these data is that the influence of race tends to become increasingly manifest and crucial as the social class level increases. The hypothesis we would advance to interpret these results has to do with increased participation in the cultural mainstream, and the differing conditions under which Negroes and whites participate (Deutsch, 1963). The weight of color and resulting minority status, it is postulated here, results in much less participation by the

Negro, while the lowest class status operates similarly for the white as well as for the Negro. In other words, it is much more difficult for the Negro to attain identical middle or upper-middle-class status with whites, and the social class gradations are less marked because Negro life in a caste society is considerably more homogeneous than is life for the majority group. This makes it extremely difficult ever really to match racial groups meaningfully on class status as the context and history of social experience are so different.

There is some fortification for the participation hypothesis in some social background data which are now in the process of analysis. These data indicate that there are fewer variegated family activities, such as eating together or taking trips, in the Negro as opposed to the white group, and though these differences are especially apparent at the lower SES levels, they hold at all SES levels and they may well operate differentially at the higher levels.

This information demands that we probe even more carefully into background variables as possible sources of some of the variation in intelligence scores found in different population groups.

One of the most striking differences between the Negro and white groups is the consistently higher frequency of broken homes and resulting family disorganization in the Negro group. Indeed, Table 7 indicates that this phenomenon varies directly with social class and with race, both at $< .001$ by x^2 test.

Table 7

Absence or Presence of Father in the Home by Race Within SES Group*
(N-543)

	SES I				SES II				SES III			
	White		Negro		White		Negro		White		Negro	
	N	%	N	%	N	%	N	%	N	%	N	%
Father present in home	(88)	84.6	(88)	56.1	(61)	89.7	(80)	72.1	(52)	100.0	(44)	86.3
Father not present in home	(16)	15.4	(69)	43.9	(7)	10.3	(31)	27.9	--	0.0	(7)	13.7
N=	(104)		(157)		(68)		(111)		(52)		(51)	

* x^2 for SES x father condition = 28.01, 2df., p= < .001
x^2 for Race x father condition = 39.152, 1df., p= < .001

We are not here considering the very real historical, social and economic antecedents of this condition, but are instead simply making an empirical observation. Since in the vast majority of cases, the home is broken by the absence of the father, this is used as a rough indicator of family cohesiveness. The absence or presence of the father has been shown in other studies to relate to need achievement and aspiration levels, especially of boys (Ausubel, 1962; Deutsch, 1960).

Table 8 presents the results of a four-way analysis of variance of Lorge-Thorndike scores, using sex, grade, race, and presence of father as independent variables.

As can be seen, significant differences are found on the race and presence of father variables, with white children scoring higher than Negro, and children coming from homes where fathers are present having significantly higher scores than children from fatherless homes. None of the interaction terms was statistically significant. SES could not be included in the analysis of variance because in our Class III sample there were no white fatherless families. Thus, by dropping SES III's from this analysis, the N here is 440.

To get at the influence of father's presence on intelligence score within groups, several additional comparisons were made. Because the absence of significant interactions in the data might relate to the strong pull exerted on the scores by race differences; the data from the Negro sample were subjected to specific analysis within grade and SES. Special attention was paid to lower SES, as the number of homes without fathers was largest in this group, and the comparisons, thus, were more meaningful.

Table 8

Four-Way Analysis of Variance on Lorge-Thorndike Intelligence Scores By Sex, Grade, Race, and Presence of Father in the Home (N=440)

Source	Sum of Squares	df.	F	Sig.
Sex	8.726	1	1.000	N.S.
Grade	404.317	1	1.882	N.S.
Race	2580.069	1	12.013	.01
Father in Home	954.073	1	4.442	<.05
Sex x Grade	26.178	1	1.000	N.S.
Sex x Race	0.000	1	0.000	N.S.
Sex x Father in Home	8.726	1	<1.000	N.S.
Grade x Race	5.817	1	1.000	N.S.
Grade x Father in Home	5.817	1	1.000	N.S.
Race x Father in Home	87.262	1	1.000	N.S.
Sex x Grade x Race	11.635	1	1.000	N.S.
Sex x Grade x Father in Home	8.726	1	1.000	N.S.
Sex x Race x Father in Home	84.354	1	<1.000	N.S.
Grade x Race x Father in Home	206.521	1	<1.000	N.S.
Sex x Grade x Race x Father in Home	55.266	1	<1.000	N.S.
Within	91490.127	424		
Total	101313.415	439		

Table 9 presents the comparisons for first and fifth grade Negro children in the lowest two SES groups. No significant differences within the first grade for either boys or girls were found, but there are consistently significant differences for corresponding comparisons for the fifth grade children. As is seen from Table 9, a consistent trend within both grades at the lower SES level appears, and in no case is there a reversal of this trend: for males, females, and the combined group, the IQ's of children with fathers in the home are always higher than those who have no father in the home. In addition, a constricted range of performance, as reflected in standard deviation units is found among fifth graders without fathers in the home, as opposed to both first and fifth graders in homes where fathers are present.

Differences between first and fifth grade children, controlling for father in home, are not significant, and they are not reported here in tabular form. Within the Negro lower-class, there is a consistent decrement in IQ level from the first to fifth grade, there again being no reversals in direction in sex or father-in-home categories. (In comparisons made between first and fifth graders in the white lower-class sample, there is a non-significant increment in score from first to fifth grade).

To return, though, to the significant differences found for the fifth grade lower-class Negro sample, we see that the overall difference between those with and those without fathers in the home is 7 points, and that this is significant on the .01 level. Comparisons within both the male and the female groups yield significance levels of .05, though the absolute point difference is about the same.

Table 9

Performance on the Lorge Thorndike Intelligence Test Among Lower and Lower Middle (SES I and II) Negro Children With and Without Fathers Present in the Home

		Father Present			Father Absent				
		$\bar{x}$	S.D.	N	$\bar{x}$	S.D.	N	t*	Sig.
SES I	Grade 1								
	Male	95.55	15.74	31	87.71	21.70	28	1.769	N.S.
	Female	94.50	10.39	10	88.20	12.19	5	1.048	N.S.
	Total	95.24	14.51	41	87.78	20.40	33	1.572	N.S.
	Grade 5								
	Male	90.81	13.14	26	83.41	9.65	17	2.009	<.05
	Female	95.19	14.73	21	87.70	9.75	20	1.916	<.05
	Total	92.77	13.89	47	85.73	9.81	37	2.853	<.01
SES II	Grade 1								
	Male	98.35	12.18	26	92.80	18.64	10	.8726	N.S.
	Female	99.27	12.99	15	--	--	--	--	--
	Total	98.68	12.33	41	92.80	18.64	10	.9483	N.S.
	Grade 5								
	Male	94.78	15.12	23	91.75	15.67	16	.6084	N.S.
	Female	90.25	17.19	16	93.00	12.27	5	.3382	N.S.
	Total	92.92	15.89	39	92.05	14.65	21	.2079	N.S.

Further analysis will reveal if the Negro score decrement from first to fifth grade is accounted for by the greater proportion of broken Negro homes. This also might account for some of the differences between Negro and white intelligence scores.

A weakness in these cross-sectional data is that there is no reliable way of knowing how long the fifth grade children have lived in homes without fathers, or whether this has been a recurrent or a consistent condition. But it is reasonable to assume that on the average the fifth graders have had more fatherless years than the first graders. If this is tenable, then what we might be tapping is the cumulative effect of fatherless years, and if so, this might explain why the first grade differences are not significant: they are simply not significant yet. This hypothesis is supported by the limited variance reported in Table 9 for fifth grade children from fatherless homes in contrast to the greater variance shown among children on the same grade level but coming from homes in which fathers are present.

A second, and perhaps more parsimonious, explanation for this finding is that IQ tests at the fifth grade level tap more responses which directly relate to the role of the father in the family structure for both boys and girls. This might have particular reference to the cohesiveness of the family and the variety of activities in which the family participates, and most specifically simply reflect the quantity of verbal interaction engendered through the medium of family organization and activity.

Another background variable which might relate to intelligence test performance is the amount and timing of schooling the child has had. As

with the father variable, it was thought that the more opportunity the child has for adult-child cont ct, conversation, and experiential variety the more positive the influence on his performance. Also Fowler's analysis (1962) pointed out the importance for the child of cognitive stimulation and practice in the early years. Therefore, an experiential variable selected for analysis was whether or not the child had any formal pre-school educational experience. Because of the variety of types of pre-school experience--some children had nursery and no kindergarten, others reversed--the variable was treated dichotomously as "some pre-school experience" or "no pre-school experience".

Table 10 reports results of a three-way analysis of variance of Lorge-Thorndike scores for fifth-grade children by sex, race, and pre-school experience.

Table 10

Three-Way Analysis of Variance on Lorge-Thorndike Intelligence Scores by Sex, Race, and Pre-School Experience (Grade 5 Only, N=205)

Source	Sum of Squares	df.	F	Sig.
Sex	128.204	1	<1.000	N.S.
Race	1785.477	1	7.873	<.01.
Pre-School Experience	1619.750	1	7.143	<.01
Sex x Race	51.594	1	<1.000	N.S.
Sex x Pre-School Experience	67.229	1	<1.000	N.S.
Race x Pre-School Experience	178.235	1	<1.000	N.S.
Sex x Race x Pre-School Experience	92.244	1	<1.000	N.S.
Within	43083.956	197		
Total	50027.132	204		

As can be seen, race differences are significant at the $<.01$ level, and so are pre-school experience differences. Those children who have had pre-school experience score significantly higher than those without. Again, the interaction terms were not significant.

Table 11 presents the same analysis for the first-grade group. Here, while the significant race difference in test performance prevails ($p <.05$), the difference as predicted by pre-school experience is not significant, although directionality is still apparent. In other words, presence or lack of pre-school experience at grade 5 more highly differentiates intelligence test scores than it does at grade 1. Nevertheless, at grade 1 it is still differentiating ($p <.10$), though not within the conventional limits of statistical significance.

Table 11

Three-Way Analysis of Variance on Lorge-Thorndike Intelligence Scores by Sex, Race, and Pre-School Experience (Grade 1 Only, N=235)

Source	Sum of Squares	df.	F	Sig.
Sex	17.283	1	<1.000	N.S.
Race	1152.579	1	5.817	<.05
Pre-School Experience	609.235	1	3.074	<.10
Sex x Race	2.160	1	<1.000	N.S.
Sex x Pre-School Experience	3.780	1	<1.000	N.S.
Race x Pre School Experience	245.746	1	1.240	N.S.
Sex x Race x Pre-School Experience	12.422	1	<1.000	N.S.
Within	25162.214	227		
Total	27148.326	234		

Note.--These analyses of variance present data for 235 first graders and 205 fifth graders. (Total N=440). This group comprises the lower SES groups, I and II only.

This finding is consistent with those for the father-in-home variable, and, therefore, lends support to the cumulative deficit hypothesis previously advanced: that deprivational influences have a greater impact at later developmental stages than at earlier ones.

The effect of the father-in-home variable on IQ for this sample has been shown in the data presented here. What is less easily measurable, but may nonetheless exist, is the potential systematic lowering of Negro children's IQ by the greater prevalence of broken homes in Negro SES groups I and II. In our samples, for example, there is a significantly greater frequency of broken homes among the Negro group, as compared with the white, and it is hard to estimate what the overall effect may be of this family instability in the development of the Negro child. From these data, it is quite conceivable, if not probable, that one effect would be the systematic lowering with age of IQ scores of the children where markedly unfavorable social conditions exist.

The data presented here represent only a small portion of those we have collected on the children in the various samples. When one surveys the entire mass of data, what is striking is the fact that on most of the <u>social</u> variables, the Negro group shows greater deprivation. This is true within social class categories, with the possible exception of Social Class III, and even here the factors associated with racial discrimination and caste are still quite operative; the class and caste discussion on Dreger and Miller (1960) is an adequate recognition of this problem. The conclusion is inescapable that the Negro group is a socially deprived one, and that whatever other measures and functions are sensitive to social effects will also reflect this deprivation.

We are now attempting to measure the ingredients of deprivation with the aim of developing a typology of deprivation which organizes experience in developmentally relevant groupings that can be related to sources of socially determined group variation in IQ performance. It would seem probable that when behavioral scientists have been able to classify and measure the elements and variables in social deprivation, the observed differential in intelligence test scores between Negro and white samples will be accounted for.

The present data on family cohesion and pre-school experience represent two possible environmental modifiers of intelligence test performance that would seem to account for a portion of difference found between ethnic, class or experiential groups. If these are influential variables a positive implication is that they are amenable to social intervention and change.

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